REMARKS

Claims 1, 5-10, 12-18, 20-25 are pending in the application. Claims 2- 4, 11, 19 and 26-29 have been cancelled.

Claims 1, 5-10, 12-18 and 20-25 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Ohno et al. (US 5,811,163). The Examiner has stated that Ohno discloses an in-mold label that has a thermoplastic resin film base layer (core layer) and a heat sealable resin layer wherein the heat sealable resin layer comprises as the main component an ethylene/α-olefin copolymer obtained by copolymerizing ethylene and an α-olefin having from 3 to 30 carbon atoms using a metallocene catalyst. The Examiner contends that although Ohno et al. fail to disclose a heat seal layer comprising a polyolefin having a peak melt temperature of less than 110°C wherein less than 25% of the polyolefin melts at a temperature of less than 50°C, and fails to disclose the use of a blend of EVA and the polyolefin in the heat seal layer, it would have been obvious based on the similar compositions of the polyolefins used by Ohno et al. and Applicants that the properties of the polyolefins would be very similar. The Examiner has stated that the properties of the polyolefins claimed by Applicants are general properties that can be measured by routine experimentation. The Examiner further contends that when "comparing the compositions and other various properties of the two polyolefins one can see that the polyolefins would also posses the peak melting temperature".

Applicants respectfully disagree with the Examiner's contentions. In the claimed invention, the polyolefin copolymer of the heat seal layer is characterized as having very specific thermal properties, i.e. a peak melting point of less than about 110°C and less than 25% of the polyolefin melting at a temperature of less than 50°C. The significance of these specific thermal properties of the polyolefin is that the particular heat seal layer of the present invention provides an in-mold label having reduced blistering, both before and after bonding, reduced shrinkage, bagginess and gage bands. Blisters may be formed in the in-mold label when the heat seal layer does not activate completely or uniformly during the molding process. In addition, blistering may occur after the in-mold label is bonded to the substrate if the heat seal layer fails to cool sufficiently fast enough. The activation temperature of the heat seal layer affects the ability of the in-mold layer to effectively bond

to the plastic substrate (page 2, lines 3-9). Bagginess and gage bands in the rolls of in-mold film material may be caused by insufficient annealing of the stretched and oriented in-mold film. After stretching, the film is thermally set or annealed. If the film is not sufficiently annealed, the polymers of the label may resume some of their original length, leading to shrinkage of the label material. Gage bands are formed from thickness irregularities in the film. Bagginess is caused by relaxation of the polymers in the film upon storage, leading to the formation of "baggy" pockets or bagginess. This defect makes the in-mold film material unprintable and thus a functional defect for in-mold labels (page 2, lines 10-21). Furthermore, the heat seal layer of the in-mold label of present invention does not exhibit the typical "plate-out" problems associated with conventional heat seal layers. Plate-out is caused by the separation of the low molecular weight fraction from the main fraction of the polymer. The specific thermal properties of the polyolefin of the present invention permit the in-mold label film to be annealed at higher temperatures and allow the heat seal layer to be activated at a lower temperature. Applicants have discovered that by selecting particular polyolefin copolymers based on their thermal properties, specifically, polyolefin copolymers having a peak melting point of less than about 110°C and less than 25% of the polyolefin melting at a temperature of less than 50°C, the problems associated with plate-out, as well as blistering, non-uniform heat seal activation, bagginess and gage bands can be reduced or eliminated.

Ohno et al. is directed to an in-mold label that shows satisfactory adhesion to a container made of either high density polyethylene or polypropylene, can be easily punched out of a label sheet without forming burrs, and can be easily fed into a mold with out blocking (col. 1, lines 58-62). Ohno et al. fails to recognize, let alone suggest a solution to the problems of plate out, bagginess and gage bands. It is disclosed in Ohno et al. that the heat seal layer has a lower melting point than the base (core) layer (col. 13, lines 42-45), and that the heat seal layer of the label is embossed in order to avoid blistering (col. 13, lines 56-58; Examples 1-5). It is further disclosed that the ethylene/α-olefin copolymer of the heat seal layer of Ohno et al. gives an elution curve which has one peak, in which a peak temperature if from 20°C to 85°C and a value of H/W of 1 or larger. The temperature rising elution fraction (TREF) is a method in which a polymer is completely dissolved at a high temperature and then cooled, thereby effecting formation of a thin polymer layer on

the surface of an inert carrier, the temperature is increased continuously or stepwise to recover the eluted component. A graph drawn by the elution fraction and elution temperature is the elution curve by which a compositional distribution (distribution of molecular weight and crystallinity) of the polymer can be measured. The shape of the elution curve obtained by TREF varies depending on the distribution of molecular weight and crystallinity of the polymer. Contrary to the Examiner's assertion, it cannot be concluded that the heat seal layer containing copolymer of Ohno et al. would possess the thermal properties of the claimed polyolefin, namely a polyolefin having a peak melt temperature of less than about 110°C and where less than about 25% of polyolefin melts at a temperature of less than 50°C as measured by differential scanning calorimetry. The Examiner has failed to identify a reason for modifying the polyolefin of Ohno et al. to have the particular thermal properties claimed.

With regard to claims 9 and 24 and the inclusion of EVA in the heat seal layer, contrary to the Examiner's assertion, it would not have been obvious to use EVA as a blending agent in the heat seal layer in order to provide a printable layer, particularly since the heat seal layer of a typical in-mold label is not printed. Furthermore, not only does Ohno et al. fail to teach the desirability of adding EVA to the heat seal layer, Ohno specifically teaches away from the desirability of EVA containing heat seal layers. At column 1, lines 39-46, Ohno discloses that the use of an ethylene/vinyl acetate copolymer as a heat seal resin results in an increased percentage of label rejects upon label punching because the label sheet containing such a heat sealable resin layer has poor punchability and yields labels having burrs. (See also Comparative Example 3 of Ohno et al.) The claimed in-mold label could not have been obvious based on the teachings of Ohno et al. and the general knowledge of those skilled in the art. Accordingly, Applicants respectfully request the withdrawal of the rejection of claims 1, 5-10, 12-18, 20-25 under 35 U.S.C. §103(a) based on Ohno et al.

CONCLUSION

In view of the foregoing remarks, Applicants respectfully request reconsideration and a timely issuance of a notice of allowance for claims 1, 5-10, 12-18, 20-25.

In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to our Deposit Account No. 18-0988 under Attorney Docket No. **AVERP2203USA**.

Respectfully submitted,

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